**Small Business Innovation Research/Small Business Tech Transfer**

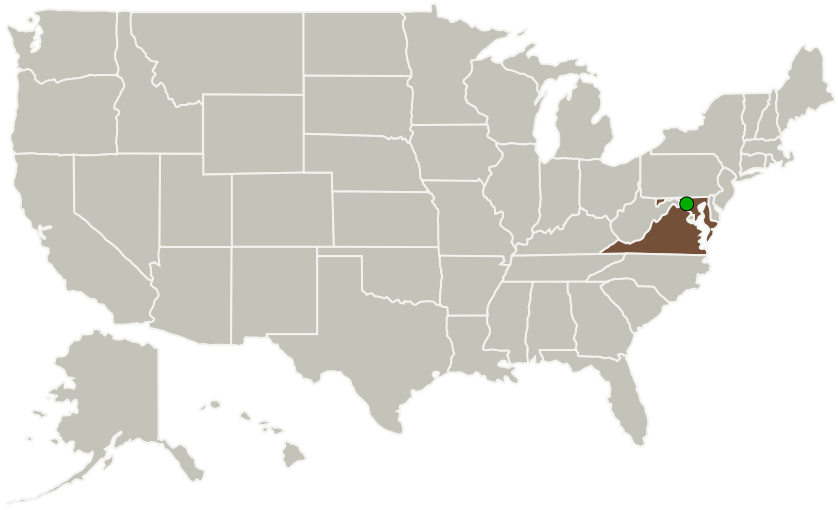
# Coherent Laser Radar Metrology System for Large Scale Optical Systems, Phase II

Completed Technology Project (2011 - 2012)

## Project Introduction

A new type of laser radar metrology inspection system is proposed that incorporates a novel, dual laser coherent detection scheme capable of eliminating both environmental and scanner based Doppler ranging error. Measurement of large telescope structures and optics requires both high accuracy and non-contact technology. Due to the non-contact, stand-off nature of this technology, this system can measure optics and provide nearly real-time feedback to figuring/polishing instruments without removing the part from the spindle or other optical grinding or polishing setup. For advanced levels of integration and test, the proposed large-volume metrology technology would allow fast, non-contact measurement of mirror rigid body alignment and prescription (i.e., radius, conic, aperture), with no special targets or references on the optic. This would allow these mirror parameters to be measured with respect to other optics, instruments, or mechanical- and spacecraft-related structures.

## Primary U.S. Work Locations and Key Partners



| Organizations Performing Work | Role | Type | Location |
|---|---|---|---|
| Pyxisvision Incorporated | Lead Organization | Industry | Bristow, Virginia |
| Goddard Space Flight Center(GSFC) | Supporting Organization | NASA Center | Greenbelt, Maryland |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| Primary U.S. Work Locations | |
|---|---|
| Maryland | Virginia |

## Project Transitions

**June 2011:** Project Start

**September 2012:** Closed out

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

Pyxisvision Incorporated

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Anthony R Slotwinski

**Co-Investigator:**

Anthony Slotwinski

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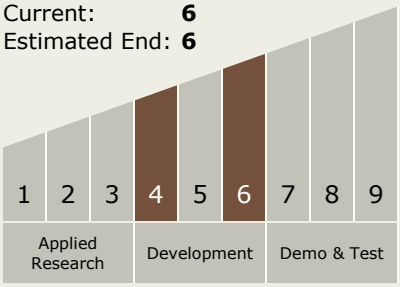
## Technology Maturity (TRL)

Start: **4**
Current: **6**
Estimated End: **6**




## Technology Areas

**Primary:**

- TX08 Sensors and Instruments
  - TX08.2 Observatories
    - TX08.2.3 Distributed Aperture

## Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System